

## Site Need Statement

General Reference Information	
1 *	<b>Need Title:</b> Cleanable HEPA filter
2 *	<b>Need Code:</b> RL-WT104
3 *	<p><b>Need Summary:</b> Most of the Hanford 169 Single Shell Tanks are passively ventilated. They are equipped with fiberglass filters, which are operating at a very low flow rate (under 10 cfm). High failure rates are being experienced with these filters. Failures are partially attributed to the low tolerance of the current filters to outside conditions such as dust and ashes from regional fires.</p> <p>The need is for a filter that would operate at flow rates of a few cfm, with a differential pressure of less than four inches (preferably one or two inches), and would be durable in the tank farm conditions. Durability could be achieved through periodic cleaning (a six month periodicity would be acceptable).</p>
4 *	<b>Origination Date:</b> November 2001
5 *	<b>Need Type:</b> Technology Need
6	<b>Operation Office:</b> Office of River Protection (ORP)
7	<b>Geographic Site Name:</b> Hanford Site
8 *	<b>Project:</b> Safe Storage <b>PBS No:</b> RL-TW03
9 *	<p><b>National Priority:</b></p> <p>___ 1. <u>High</u> - Critical to the success of the EM program, and a solution is required to achieve the current planned cost and schedule.</p> <p><u>X</u> 2. <u>Medium</u> - Provides substantial benefit to EM program projects (e.g., moderate to high life-cycle cost savings or risk reduction, increased likelihood of compliance, increased assurance to avoid schedule delays).</p> <p>___ 3. <u>Low</u> - Provides opportunities for significant, but lower cost savings or risk reduction, may reduce the uncertainty in EM program project success.</p>
10	<b>Operations Office Priority:</b>
Problem Description Information	
11	<p><b>Operations Office Program Description:</b> The overall purpose of the safe-storage function is to operate and maintain the double shell tank (DST) and single shell tank (SST) farms in a safe and compliant manner until the contained wastes are retrieved and the tank farms are ready for closure. This includes performing day-to-day operations, maintaining and upgrading infrastructure, resolving safety issues, assessing tank integrity, characterizing the waste, and managing the DST waste inventory. This function also includes interim stabilization of selected tanks. The end state of safe storage is containment of DST and SST tank wastes in a manner that supports safe waste retrieval for final waste disposal; tank-farm structures, including DSTs and SSTs, ready for final disposal and closure and tank farms amenable and ready for the mitigation of any environmental releases that occurred during storage and retrieval of tank waste.</p>
12	<p><b>Need/Problem Description:</b> Most of the Hanford 169 Single Shell Tanks are passively ventilated. They are equipped with fiberglass filters, which are operating at a very low flow rate (under 10 cfm). High failure rates are being experienced with these filters. Failures are partially attributed to the low tolerance of the current filters to outside conditions such as dust and ashes from regional fires.</p> <p><b>Program Baseline Summary (PBS) No.:</b> TW03</p> <p><b>Work Breakdown Structure (WBS) No.:</b> 5.01.03.02</p> <p><b>TIP No.:</b> The needed device described in this need statement is needed at any time in the Tank Farms mission, until the end of tank retrieval (two decades at least).</p>
13	<p><b>Functional Performance Requirements:</b> The need is for a filter that would operate at flow rates of a few cfm, with a differential pressure of less than four inches (preferably one or two inches), and would be durable in the tank farm conditions. Durability could be achieved through periodic cleaning (a six month periodicity would be acceptable).</p>

**	<b>Schedule Requirements:</b> This is a current, ongoing operational need. Work underway to address the SRS problem has direct applicability.
14	<b>Definition of Solution:</b>
15 *	<b>Targeted Focus Area:</b> Tanks Focus Area (TFA)
16	<b>Potential Benefits:</b>
17 *	<b>Potential Cost Savings:</b> \$100K to \$1M per year
18 *	<b>Potential Cost Savings Narrative:</b> The cost savings will come primarily from the lower frequency of filter replacement.
**	<b>Technical Basis:</b> The Tank Focus Area is developing sintered metal and other cleanable filtering media. Their applicability to the SST low flow rate-low differential pressure case is to be assessed.
19	<b>Cultural/Stakeholder Basis:</b>
20	<b>Environment, Safety, and Health Basis:</b> Reducing the filter replacement frequency will reduce worker exposure risks.
21	<b>Regulatory Drivers:</b>
22 *	<b>Milestones:</b> Schedule risk will be reduced for all milestones related to tank farm activities supporting Safe Storage, Retrieval, and Closure, since premature failure of breather filters impacts Tank Farm work load and qualified staff availability.
23 *	<b>Material Streams:</b> TW03 - Sludge, salt, liquid (RL-HLW-20)
24	<b>TSD System:</b> Single Shell Tank systems
25	<b>Major Contaminants:</b> Pu-238, 239, 240, 241; AM-241; U-238; C-14; Ni-59/63; Nb-94; Tc-99; I-129; Cm-242; Sr-90; Cs-137; Sn-126; Se-79; chromium; nitrate; nitrite; complexants (EDTA/HEDTA)
26	<b>Contaminated Media:</b> Tank waste consisting of high molarity sodium hydroxide/sodium nitrate solution containing saturated saltcake and/or sludge.
27	<b>Volume/Size of Contaminated Media:</b> The single shell tanks are generally 75 ft. in diameter, and up to 40 feet deep with their tops buried about 10 feet below the ground surface.
28 *	<b>Earliest Date Required:</b> FY 2002
29 *	<b>Latest Date Required:</b> End of Tank Farms mission (post 2020)
<b>Baseline Technology Information</b>	
30	<b>Baseline Technology(ies)/Process:</b>  <b>Technology Insertion Point:</b> The needed device described in this need statement is needed at any time in the Tank Farms mission, until the end of tank retrieval ( two decades at least).
31	<b>Life-Cycle Cost Using Baseline:</b>
32	<b>Uncertainty on Baseline Life-Cycle Cost:</b>
33	<b>Completion Date Using Baseline:</b>
<b>Points of Contact (POC)</b>	
34	<b>Contractor End User POCs:</b> D.C. (Doug) Larsen, CHG, 509-373-5995, F/509-373-4275, <a href="mailto:Douglas_C_Larsen@rl.gov">Douglas_C_Larsen@rl.gov</a>
35	<b>DOE End User POCs:</b>
36**	<b>Other Contacts:</b> K.A. (Ken) Gasper, CHG, 509-373-1948, F/509-376-1788, <a href="mailto:Kenneth_A_Ken_Gasper@rl.gov">Kenneth_A_Ken_Gasper@rl.gov</a>

\*Element of a Site Need Statement appearing in IPABS-IS

\*\*Element of a Site Need Statement required by CHG